

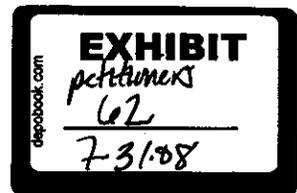
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STATE OF SOUTH DAKOTA  
PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE PETITION OF	)	
WEST RIVER COOPERATIVE	)	Docket No. TC07-116
TELEPHONE COMPANY INC. FOR	)	
ARBITRATION PURSUANT TO THE	)	<b>DIRECT TESTIMONY</b>
TELECOMMUNICATIONS ACT OF 1996	)	
TO RESOLVE ISSUES RELATED TO	)	<b>OF</b>
THE INTERCONNECTION	)	
AGREEMENT WITH ALLTEL, INC.	)	<b>LARRY D. THOMPSON</b>
	)	
	)	

**DIRECT TESTIMONY OF LARRY THOMPSON  
ON BEHALF OF  
WEST RIVER COOPERATIVE TELEPHONE COMPANY INC.**

- 1 **Q1. Please state your name, employer, business address and telephone number.**  
2
- 3 A1. My name is Larry Thompson. I am the Chief Executive Officer of Vantage Point  
4 Solutions, Inc. ("Vantage Point"). My business address is 2211 North Minnesota  
5 Street, Mitchell, South Dakota, 57301.
- 6 **Q2. On whose behalf are you testifying?**  
7
- 8 A2. I am testifying on behalf of West River Cooperative Telephone Company Inc.  
9 ("West River"). Based on my experience working with West River for over 10  
10 years, I know that West River provides local telephone exchange service and  
11 exchange access services in South Dakota and is engaged in the provision of  
12 general telecommunications services in the State of South Dakota subject to the  
13 jurisdiction of the South Dakota Public Utilities Commission ("Commission").



1 **Q3. Generally, what types of services does Vantage Point perform?**

2

3 A3. Vantage Point is a telecommunications engineering and consulting company  
4 whose services include long range communication plans and feasibility studies,  
5 emerging technology analysis and migration studies, telecommunications  
6 electronic equipment engineering, outside plant engineering, field services  
7 engineering and regulatory consulting.

8 **Q4. What are your duties and responsibilities at Vantage Point?**

9

10 A4. I am responsible for providing consulting and engineering services to clients in a  
11 wide array of technical and regulatory areas associated with telecommunications.  
12 Our client base consists of small Independent Telephone Companies such as West  
13 River. We have more than 80 fulltime employees on staff. I am also responsible  
14 for the normal duties you would expect from the chief executive officer for a  
15 company of our size.

16 **Q5. What is your educational background?**

17

18 A5. I have a Bachelor of Arts in Physics from William Jewell College in Liberty,  
19 Missouri, and both Bachelors and Masters degrees in Electrical and Computer  
20 Engineering from the University of Kansas in Lawrence, Kansas.

21 **Q6. Do you hold any professional engineering licenses?**

22 A6. Yes. I am a licensed professional engineer in Colorado, Georgia, Iowa, Idaho,  
23 Indiana, Michigan, Minnesota, Missouri, Nebraska, New York, Ohio, South  
24 Dakota, Utah, Washington, Wisconsin and Wyoming. I am also a member of the  
25 National Council of Examiners for Engineering and Surveying (NCEES).

1 **Q7. Do you have a resume of your experience?**

2 A7. Yes, it is attached to my testimony as Exhibit LT-D-1.

3 **Q8. What is the purpose of your direct testimony?**

4  
5 A8. The purpose of my direct testimony is to provide technical and regulatory facts  
6 relating to the Arbitration<sup>1</sup> between West River and Alltel Communications, Inc.  
7 (Alltel). Specifically, I will provide information relating to Issue 2 identified in  
8 the Petition for Arbitration for West River (referred to herein as the "Petition").  
9 This issue was presented in the Petitions as follows: "What is the appropriate  
10 Percent InterMTA Use Factor to be applied to non-IntraMTA traffic exchanged  
11 between the parties?"

12 **Q9. Why is it necessary to establish an InterMTA Use Factor in conjunction with**  
13 **an interconnection agreement between an incumbent local exchange carrier**  
14 **("ILEC") such as West River and a commercial mobile radio service**  
15 **("CMRS") provider such as Alltel?**

16  
17 A9. Alltel terminates different types of traffic to West River intermingled together on  
18 the same facilities. The number of Minutes of Use ("MOU") for each of two  
19 basic types of traffic must be determined in order to calculate the correct  
20 compensation due West River. The two basic types of mobile-to-land traffic that  
21 Alltel terminates to West River are: (a) intraMTA or local MOUs which are  
22 subject to reciprocal compensation pursuant to 47 U.S.C. § 251(b)(5) and 47  
23 C.F.R. § 51.701; and (b) interMTA or non-local MOUs which are subject to  
24 switched access charges pursuant to 47 U.S.C. § 251(g). The interMTA MOUs or  
25 non-local MOUs that are both intrastate MOU and interstate MOU, therefore

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<sup>1</sup> In The Matter of the Petition Of West River Cooperative Telephone Company Inc. for Arbitration Pursuant to the Telecommunications Act Of 1996 To Resolve Issues Related to The Interconnection Agreement With Alltel, Inc. (referred to herein as the "Petition").

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1 should be further divided between intrastate interMTA MOUs that are subject to  
2 intrastate switched access tariff rates and interstate interMTA MOUs that are  
3 subject to the interstate switched access tariff rates.

4 **Q10. Before we proceed with further detailed discussion of the traffic types that**  
5 **you just described, by way of background, could you provide a definition of**  
6 **an MTA and the relation of such term to the State of South Dakota?**  
7

8 A10. Yes. Major trading area or “MTA” is a term originally developed by Rand  
9 McNally to describe geographic areas that appeared in the 1992 Rand McNally  
10 Commercial Atlas and Marketing Guide. Except for some minor modifications,  
11 the Federal Communications Commission (“FCC”) adopted the Rand McNally  
12 MTAs to define the geographic areas for some of the wireless licenses in the  
13 United States. The resulting 51 MTAs used by the FCC are shown on Exhibit  
14 LT-D-2. The MTAs in South Dakota and the surrounding states are highlighted  
15 in Exhibit LT-D-2 for emphasis.

16 Exhibit LT-D-3, shows the state of South Dakota along with the applicable MTAs  
17 boundaries. MTA-12, consisting generally of the eastern two-thirds of the State,  
18 is the Minneapolis MTA. MTA-22, consisting generally of the western one-third  
19 of the State, is the Denver MTA. MTA-32, consisting of the southeastern corner  
20 of the State, is the Des Moines MTA.

21 **Q11. What MTA are the West River exchanges located in?**

22 A11. All of West River’s exchanges are in the Denver MTA-22. This can also be seen  
23 in Exhibit LT-D3.

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1 **Q12. Why are MTAs significant when considering CMRS traffic terminating to an**  
2 **ILEC?**

3 A12. A CMRS call that originates and terminates in the same MTA is referred to as an  
4 intraMTA call. Likewise, a CMRS call that originates in one MTA and  
5 terminates in a different MTA is referred to as an interMTA call. The FCC rules  
6 state that interMTA calls are access calls (toll calls) and intraMTA calls are local  
7 calls. The compensation due the ILEC from the CMRS carrier is different for an  
8 access call than it is for a local call.

9 **Q13. Using Exhibit LT-D-3, can you give examples of an intraMTA and an**  
10 **interMTA call?**

11  
12 A13. Absolutely. However, before providing examples, I believe it would be helpful to  
13 provide the FCC's guideline for establishing the location of the mobile phone  
14 customer. In its *First Report and Order*, FCC 96-325 (Interconnection between  
15 Local Exchange Carriers and Commercial Mobile Radio Service Providers),  
16 paragraph 1044, the FCC stated: "For administrative convenience, the location of  
17 the initial cell site when a call begins shall be used as the determinant of the  
18 geographic location of the mobile customer." Thus, if a CMRS customer  
19 originates a mobile call from an initial cell site located in Rapid City, South  
20 Dakota (Denver MTA-22) to a West River landline customer located in the Bison,  
21 South Dakota local exchange area (also located in the Denver MTA-22), this call  
22 would be considered an intraMTA call, since both the calling CMRS customer (at  
23 the start of the call) and the called West River customer are located in the Denver  
24 MTA-22. Likewise, if a CMRS customer originates a mobile call from an initial  
25 cell site located in Denver, Colorado (Denver MTA-22) to a West River landline

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1 customer located in the Bison, South Dakota local exchange area (also located in  
2 the Denver MTA-22), this call would also be considered to be an intraMTA call,  
3 since it also originates (based on the initial cell site location) and terminates  
4 within the same MTA.

5 However, if a CMRS customer originates a mobile call from an initial cell  
6 site located in Aberdeen, South Dakota (which is within Minneapolis MTA-12)  
7 making a call to a West River customer located in the Bison, South Dakota local  
8 exchange area (which is within the Denver MTA-22), this call would be  
9 considered an interMTA call since the CMRS call originated (at the start of the  
10 call) in one MTA (Minneapolis MTA-12) and terminated in a different MTA  
11 (Denver MTA-22). Additionally, the call in this example both originates and  
12 terminates inside South Dakota, so it is considered an *intrastate* interMTA call. If  
13 a CMRS customer originates a call from an initial cell site located in Minneapolis,  
14 Minnesota (which is within Minneapolis MTA-12) to a West River customer  
15 located in the Bison, South Dakota local exchange area (which is within the  
16 Denver MTA-22), this call would be considered an *interstate* interMTA call since  
17 the call not only crosses an MTA boundary (Minneapolis MTA-12 to Denver  
18 MTA-22), but it also originates and terminates in different states (Minnesota  
19 originated and South Dakota terminated).

20 **Q14. Have you reviewed the terms of the interconnection agreement attached to**  
21 **the Petitions filed in these proceedings as Exhibit A, and if so, do you agree**  
22 **that the definition of “interMTA Traffic” that appears on page 3 thereof is**  
23 **clear and accurate?**  
24

25 A14. Yes, I have reviewed the interconnection agreement in Exhibit A, and more  
26 specifically the definition to which you refer. The interconnection agreement

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1 defines interMTA traffic as wireless to wireline calls that originate in one MTA  
2 and terminate in another MTA, based on the location of the initial cell site serving  
3 the wireless end user at the beginning of the call and the location of the end office  
4 serving the wireline end user. This definition is consistent with my understanding  
5 of the requirements of FCC orders on this subject and is the generally accepted  
6 definition of interMTA traffic exchanged between customers of wireless and  
7 wireline carriers.

8 **Q15. Why is it necessary for a CMRS provider such as Alltel and an ILEC such as**  
9 **West River to establish an interMTA Use Factor in their reciprocal**  
10 **compensation agreement?**

11  
12 A15. As discussed previously, the ILEC is compensated differently for interMTA and  
13 intraMTA traffic. CMRS providers such as Alltel often choose to deliver  
14 interMTA traffic intermingled with intraMTA traffic to the ILEC over the same  
15 facilities rather than sending this traffic through an interexchange carrier (IXC).  
16 Unfortunately, it is not possible for the ILEC to determine the location for the  
17 CMRS caller based on the signaling information delivered by the CMRS provider.  
18 Since the ILEC cannot determine the CMRS caller location, it is not possible for  
19 the ILEC to determine the appropriate compensation applicable to each individual  
20 call. Because of this, CMRS providers and ILECs often agree upon an InterMTA  
21 Use Factor that can be applied to the total MOUs that are terminated by the  
22 CMRS provider to the ILEC. An accurate InterMTA Use Factor ensures that the  
23 ILEC is properly compensated for the CMRS originated traffic that is terminated  
24 to the ILEC's landline customers. It is also important that the ILEC be able to  
25 accurately divide the interMTA traffic into interstate and intrastate jurisdiction so

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1 the ILEC can be properly compensated for the interstate and intrastate switched  
2 access portions of the interMTA traffic, since the tariff rates applicable to each  
3 traffic type (jurisdiction) are different for West River.

4 **Q16. Since the exact location of the wireless caller cannot be determined for each**  
5 **individual call from the SS7 signaling, how is the InterMTA Use Factor**  
6 **determined?**

7  
8 A16. Since the originating carrier (the CMRS carrier) does not provide signaling  
9 information to the terminating carrier (the ILEC) that is adequate to determine  
10 whether the call in question is an interMTA or intraMTA call, it is often necessary  
11 to perform a traffic study to determine the InterMTA Use Factor. Performing  
12 such a study is consistent with the FCC rules. Again referring to paragraph 1044  
13 of the FCC's *First Report and Order* (Interconnection between Local Exchange  
14 Carriers and Commercial Mobile Radio Service Providers), the FCC stated: "We  
15 conclude, however, that it is not necessary for incumbent LECs and CMRS  
16 providers to be able to ascertain geographic locations when determining the rating  
17 for any particular call at the moment the call is connected. *We conclude that*  
18 *parties may calculate overall compensation amounts by extrapolating from traffic*  
19 *studies and samples.*" (emphasis added)

20 **Q17. Is there more than one methodology that can be used to establish an**  
21 **InterMTA Use Factor?**

22  
23 A17. Yes, there are three methods I am familiar with that can be used to determine an  
24 InterMTA Use Factor. They are (1) the Signaling System 7 or "SS7" method, (2)  
25 the Call Detail Record or "CDR" method and (3) the Point of Interconnection or  
26 "POI" method. I will discuss each briefly below.

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1           (1)    The SS7 method relies on the information that is available in the SS7  
2           protocol. SS7 is the industry standard signaling protocol for inter-carrier  
3           communications. SS7 network equipment can be used to monitor and record the  
4           SS7 messages exchanged between the CMRS and ILEC networks. These  
5           messages can be recorded by SS7 network equipment and be post-processed to  
6           estimate the number of interMTA and intraMTA MOU. Unfortunately, carriers  
7           are not required to populate the SS7 message with any information that would  
8           allow the ILEC to determine the location (initial cell site) of the CMRS customer  
9           (calling party). Therefore, the SS7 analysis technique uses the CMRS customer's  
10          NPA-NXX to estimate the location of the CMRS customer. Assuming the CMRS  
11          carrier is populating the SS7 message properly, this method does not require the  
12          cooperation of the CMRS carrier as the NPA-NXX of the calling and called party  
13          should always be passed in the SS7 record.

14          (2)    The CDR method uses signaling information that is available internal to  
15          the CMRS's switching network. The CDR data includes the location of the  
16          wireless caller at the initiation of the call (or the location of the initial cell site), so  
17          the interMTA calls can be more accurately identified. For example, the Lucent  
18          Technologies 5ESS wireless switch can identify the cell site number as part of the  
19          Automatic Message Accounting ("AMA") setup internal to the switching system  
20          per Lucent Table 2003 – Radio/Channel/Cell Information.<sup>2</sup> Similarly, the Nortel  
21          Network MTX wireless switch identifies the originating trunk group from a  
22          specific cell site location as a field in the AMA recording called the First

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<sup>2</sup> Lucent Technologies Document 401-610-133 Issue 28 - Flexnet<sup>®</sup>/Autoplex<sup>®</sup> Wireless Networks  
Executive Cellular Processor (ECP) Release 24 pp 4-125 to 4-127.

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1           Originating Trunk Common Language Location Identifier (“CLLI”) field.<sup>3</sup>  
2           Because the location of the CMRS customer originating the call is needed to  
3           accurately determine if the call is interMTA in nature and the fact that this is not  
4           passed along to the landline carrier in the SS7 signaling, gathering the CDR data  
5           requires cooperation of the CMRS carrier to collect this information.

6           (3)     Finally, the POI method is described in paragraph 1044 of the *First Report*  
7           *and Order*, where the FCC states: “As an alternative, LECs and CMRS providers  
8           can use the point of interconnection between the two carriers at the beginning of  
9           the call to determine the location of the mobile caller or called party.”

10   **Q18. In your expert opinion, does one of these methods more accurately measure**  
11   **the InterMTA Use Factor and, if so, why?**

12  
13   A18. Yes, the CDR method is the most accurate. The goal of any InterMTA Use  
14   Factor study is to estimate the amount of interMTA traffic as accurately as  
15   possible or practical. In my opinion, the CDR method is the most accurate  
16   method as the CDR method uses actual data from the CMRS switching network  
17   to determine the location of the CMRS caller’s cell site at the start of the call and  
18   thus is entirely consistent with the definition of “InterMTA Traffic” as provided  
19   in the interconnection agreement attached to the Petition as Exhibit A. Also, the  
20   location of the central office serving the ILEC customer who is being called by  
21   the CMRS caller is easily determined by the NPA-NXX of the ILEC customer.

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<sup>3</sup> Nortel Networks Document 411-2131-204 – MTX 12 (February 2004) – DMS-MTX CDMA/TDMA  
Billing Management Manual Standard Issue 11.11 p 6-147.

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1 **Q19. Do you believe that the SS7 method can result in an accurate estimate of the**  
2 **interMTA traffic being terminated to West River by Alltel?**  
3

4 A19. Yes. The SS7 method uses the telephone number or NPA-NXX of the CMRS  
5 customer and the ILEC customer to arrive at an estimate of the InterMTA Use  
6 Factor. This method is often referred to as the “telephone numbers” method.  
7 This method is not as accurate as the CDR method, since the SS7 method does not  
8 properly account for ported numbers and the actual customer location cannot be  
9 properly identified. However, it has been my experience that the SS7 method  
10 provides a reasonable estimation of the InterMTA Use Factor in the absence of  
11 CDR information from the CMRS carrier.

12 **Q20. Do you believe that using the POI method would result in an accurate**  
13 **estimate of the interMTA traffic being terminated to West River by Alltel?**  
14

15 A20. No. There are very limited circumstances where a POI methodology would yield  
16 accurate results. As discussed previously, to arrive at an accurate interMTA Use  
17 Factor, it is important to determine the location of the CMRS customer at the start  
18 of the call. At a minimum, the MTA and the state in which the call originated  
19 must be known for the CMRS caller so that the traffic type (intraMTA or  
20 interMTA and interstate or intrastate) can be accurately determined. In densely  
21 populated areas, it is possible that there could be a large number of POIs and the  
22 POI could be a reasonable representation of the location of the CMRS customer.  
23 In rural areas like South Dakota, the CMRS provider may deliver calls originating  
24 in various states or in various MTAs to a single POI. Therefore, the POI method  
25 will not yield accurate interMTA results when considering the Alltel and the West  
26 River network.

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1 **Q21. Have you developed the InterMTA Use Factor for traffic terminated by**  
2 **Alltel on the network of West River by use of the CDR method?**

3  
4 A21. No. Alltel has been unwilling to provide the CDR data for this analysis.

5 **Q22. Can you explain how you used the SS7 method to determine the InterMTA**  
6 **factor for the Alltel traffic being terminated to the West River network?**

7  
8 A22. Certainly. The SS7 data was gathered via Tekno SCCS-288B/7, a device  
9 commonly known as the Tekno Box, which is located at the South Dakota  
10 Network (SDN) facilities in Sioux Falls, South Dakota and was programmed to  
11 monitor the SS7 signaling for the traffic Alltel terminates to West River. Vantage  
12 Point used the SS7 signaling records captured during the October 1-15, 2004 time  
13 period. Vantage Point extracted the SS7 records and imported the data into  
14 Microsoft SQL Server 2000 database (SQL). Using SQL, Vantage Point sorted  
15 all of the calls that originated with an Alltel NPA-NXX and terminated to a West  
16 River NPA-NXX into two groups – those that originated and terminated in the  
17 same MTA and those that originated and terminated in different MTAs. The  
18 MTA of the NPA-NXX was determined by the location of the central office to  
19 which each of the NPA-NXXs were assigned. The calls that originated and  
20 terminated in different MTAs were further divided into those that originated  
21 inside South Dakota and those that originated outside of South Dakota.

22 Vantage Point then determined the total call duration of the intraMTA calls and  
23 the interstate interMTA calls and the intrastate interMTA calls. The InterMTA  
24 Use Factor was determined by taking the ratio of the call duration for the  
25 interMTA calls to the call duration for the total Alltel calls terminated to West  
26 River. The interMTA calls were further refined to determine the amount of

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1 interMTA traffic that was intrastate interMTA in nature and those that were  
2 interstate interMTA in nature based upon the originating and terminating NPA-  
3 NXX.

4 **Q23. What was the result of the interMTA analysis that was performed by**  
5 **Vantage Point using the SS7 method?**

6  
7 A23. The result of this analysis can be seen in Exhibit LT-D-4. This exhibit shows the  
8 results of the InterMTA analysis for West River, which yielded an InterMTA Use  
9 Factor of 26.6%. This means that 26.6% of the traffic being terminated by Alltel  
10 to West River over their common trunks is interMTA in nature. Of the total  
11 terminating interMTA minutes, 61.8% of the traffic was determined to be  
12 intrastate in nature and 38.2% was determined to be interstate in nature.

13 **Q24. What are the proper rates per MOU that would be applied to intrastate**  
14 **interMTA and interstate interMTA traffic?**

15  
16 A24. West River is required to charge Alltel their current switched access rates for  
17 these traffic types as reflected in their currently filed tariffs just as West River  
18 does with regard to all carriers that terminate intrastate and interstate switched  
19 access traffic to their networks. For the intrastate interMTA traffic, the currently  
20 approved intrastate switched access tariff rate (approved by the South Dakota  
21 Public Utilities Commission) is applied, which currently is the Local Exchange  
22 Carriers Association (LECA) rates.

23 In the case of interstate interMTA traffic, West River uses their FCC filed and  
24 approved interstate switched access tariff rates. West River is a member of the  
25 NECA Traffic Sensitive Pool and therefore is an issuing carrier in National

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1 Exchange Carrier Association, Inc. Tariff F.C.C. No. 5 and bills these applicable  
2 rate elements for interstate switched access traffic.

3 The intrastate interMTA and interstate interMTA rates charged by West River to  
4 Alltel should be adjusted each time a tariff rate revision is approved by the  
5 applicable Commission, as is done for the switched access MOU for all other  
6 carriers terminating switched access traffic to the West River customers.

7 **Q25. How can the interMTA results of this analysis be applied to the traffic being**  
8 **terminated by Alltel to West River and provide an estimate of the**  
9 **compensation due West River from Alltel based on their current switched**  
10 **access rates?**

11  
12 A25. I will describe how the results of the interMTA traffic study can be applied to the  
13 Alltel traffic being terminated to West River by way of an example. First, we will  
14 assume that 347,200 total MOU of annual traffic originating from Alltel CMRS  
15 customers terminates to West River customers. First, the total applicable  
16 interMTA traffic can be determined by taking total MOU for Alltel times the  
17 InterMTA Use Factor (347,200 x 26.6%), which would give you 92,355 total  
18 interMTA MOU. Of these interMTA MOU, 61.8% was determined to be subject  
19 to West River's current intrastate switched access rates (presently the rate is  
20 \$0.1250 per MOU for all exchanges). By taking the total interMTA MOU times  
21 the intrastate interMTA percentage (92,355 x 61.8%), you would have 57,075  
22 MOU subject to the intrastate switched access rate (57,075 x \$0.1250), which  
23 would be approximately \$7,100. Then, if the total interMTA MOU is multiplied  
24 by the applicable interstate interMTA factor of 38.2% (92,355 x 38.2%), it is  
25 found that 35,280 MOU are subject to the interstate interMTA switched access  
26 rate (35,280 x \$0.087067). Since the interstate switched access rate varies by

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1 exchange depending on the applicable rate elements and mileage of each  
2 exchange, we estimated the average interstate switched access rate to be  
3 \$0.087067 per interstate MOU for West River. The total estimated annual  
4 interstate interMTA revenue would be approximately \$3,075. Therefore the total  
5 estimated annual revenue for West River would be around \$10,075 based on these  
6 MOU and the factors listed in LT-D-4.

7 **Q26. Does that conclude your testimony?**

8 A26. Yes. However, I wish to reserve the opportunity to supplement this testimony in  
9 the future, if necessary.

# West River Exchanges by Major Trading Areas

